Date: Wed, 17 Nov 93 04:30:59 PST
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V93 #105
To: Ham-Homebrew

Ham-Homebrew Digest Wed, 17 Nov 93 Volume 93 : Issue 105

Today's Topics:
Low-cost VHF amplifier application note (4 msgs)
Maxon?
single sideband (2 msgs)
single sideband, phasing and T2/R2
What's RG-22?

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

Date: Tue, 16 Nov 1993 17:44:51 GMT
From: elroy.jpl.nasa.gov!swrinde!cs.utexas.edu!howland.reston.ans.net!usenet.ins.cwru.edu!news.ecn.bgu.edu!willis1.cis.uab.edu!spam.dom.uab.edu!user@ames.arpa
Subject: Low-cost VHF amplifier application note
To: ham-homebrew@ucsd.edu

In article <holland-151193111058@beagley.dom.uab.edu>,
holland@gasmac.dom.uab.edu (Steve Holland) wrote:

>
> One person asked about what application note had a reference to a vhF power amplifier. I got several frol motorola. One, a broadband 300 watt amplifier from 10 to 300 MHz was interesting until I saw the power transistor alone cost about $300 in quantity of one. A much more affordible amplifier was described in engineering Bulletin EB-90, Low-cost VHF amplifier has broadband performance. It uses the MRF 260 and MRF 262 and includes the PCB pattern in the note. 15 Watts output at 146 MHz.

>
> Darn, I realize I had another note for a higher note for a higher power amplifier which included an automatic T/R relay in the design. I'll post on that when I bring it into work.

The other note of interest is AN-791m a 75W and 35W power amp optimized for 144-148 MHz. It has a built in carrier operated relay, which stays up in SSB and CW with a built in delay on releasing the relay.

To the person who emailed me, the responses bounced.

There are kits for these amps from communication concepts,
508 Millstone Drive
Beaver Creek OH 45434-5840
513-426-8600

The 35 watt and 75 watt amps are $80 and $120 respectivley.

Does anyone have experience dealing with them?

Steve Holland

Date: 16 Nov 1993 18:41:46 GMT
From: library.ucla.edu!europa.eng.gtefsd.com!howland.reston.ans.net!spool.mu.edu!news.clark.edu!netnews.nwnet.net!news.uoregon.edu!newsadmin@network.ucsd.edu
Subject: Low-cost VHF amplifier application note
To: ham-homebrew@ucsd.edu

In article <gila005-161193124904@spam.dom.uab.edu> gila005@uabdpo.dpo.uab.edu (Stephen Holland) writes:
> In article <holland-151193111058@beagley.dom.uab.edu>, holland@gasmac.dom.uab.edu (Steve Holland) wrote:
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>
> Steve Holland

I assembled the 35W version about 6 yrs ago...used it for about 3 and sold it
at a hamfest. Worked fine for me and was fairly easy to put together, would
have been nice to have a pre-amp though.
--
Jeff Hite KF7SZ
Computing Center
U of Oregon
jeffh@ludwig.cc.uoregon.edu

Date: 16 Nov 1993 17:48:34 GMT
From: news.larc.nasa.gov!grissom.larc.nasa.gov!kludge@ames.arpa
Subject: Low-cost VHF amplifier application note
To: ham-homebrew@ucsd.edu

In article <gila005-161193124904@spam.dom.uab.edu> gila005@uabdpo.dpo.uab.edu
(Stephen Holland) writes:
>In article <holland-151193111058@beagley.dom.uab.edu>,
>holland@gasmac.dom.uab.edu (Steve Holland) wrote:
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>for 144-148 MHz. It has a built in carrier operated relay, which stays
>up in SSB and CW with a built in delay on releasing the relay.

I've got some spare 4XC1000 tubes, which I believe are in good shape,

although I haven't fired them up to measure them recently. What I don't have are sockets and supply transformers to build a transmitter using them. If someone out there does, a trade might be arrangeable.

--scott

--

"C'est un Nagra. C'est suisse, et tres, tres precis."

Date: Mon, 15 Nov 1993 17:16:06 GMT
From: mvb.saic.com!unogate!news.service.uci.edu!usc!howland.reston.ans.net!agate!usenet.ins.cwru.edu!news.ecn.bgu.edu!willis1.cis.uab.edu!beagley.dom.uab.edu!user@network.ucsd.edu
Subject: Low-cost VHF amplifier application note
To: ham-homebrew@ucsd.edu

One person asked about what application note had a reference to a vhF power amplifier. I got several frol motorola. One, a broadband 300 watt amplifier from 10 to 300 MHz was interesting until I saw the power transistor alone cost about $300 in quantity of one. A much more affordible amplifier was described in engineering Bulletin EB-90, Low-cost VHF amplifier has broadband performance. It uses the MRF 260 and MRF 262 and includes the PCB pattern in the note. 15 Watts output at 146 MHz.

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Steve Holland

Date: 16 Nov 1993 18:14:49 -0500
From: panix!not-for-mail@uunet.uu.net
Subject: Maxon?
To: ham-homebrew@ucsd.edu

Does anyone know of a telephone # and address for Maxon? I'm looking for a retail outlet that carries their 49 MHz line of walkie talkies. I'm looking for walkie talkies in this range with have an ear-mike feature. I tried Radio Shack, they have a model which has five channels, but doesn't have the ear-mike feature. I was told that Maxon makes most of the Radio Shack models, and they would probably have what I'm looking for under their own brand name.

--

HenryC@panix.com

Date: 16 Nov 93 16:38:07 GMT
From: psinntp!arrl.org@uunet.uu.net
Subject: single sideband
To: ham-homebrew@ucsd.edu

In rec.radio.amateur.homebrew, rkarlqu@scd.hp.com (Richard Karlquist) writes:
>What you really want to do is: instead of the phasing method of SSB,
>use the Weaver method of SSB (also called the "third" method, or the
>zero IF method). In this method, you build a direct conversion
...[deleted]...
>audio. That *is* fairly easy to notch out. Go ahead, build this
>system and write it up for Communications Quarterly. I'll be
>interested to see how well you can do.

See September 1993 QEX, "A Different Weave of SSB Receiver," by
P. Anderson, KC1HR. (There is also a Weaver-method generator
implemented using DSP in the same issue.)

Jon Bloom, KE3Z | jbloom@arrl.org
American Radio Relay League |
225 Main St., Newington CT 06111 |

Date: Mon, 15 Nov 1993 16:45:50 GMT
From: rit!atd@cs.rochester.edu
Subject: single sideband
To: ham-homebrew@ucsd.edu

Richard Karlquist writes:
>The phasing method of SSB is principally a ham radio technique.
>Other services that have to meet FCC requirements reliably never, to
>my knowledge, attempted to use phasing SSB. Basically, the problem
>you run into is that it is difficult to get enough carrier suppression
>without hitting the mixer so hard that you get too much audio distortion
>and splatter. The ham rigs had adjustments to get the mixer perfectly
>balanced (at least at one temperature) to get around this, but that
>would be undesirable commercially. ....

This is why they abandoned the phasing method back in the days of tubes.
It was all true then. It was difficult to get even 20 db or so of
carrier and alt sideband suppression. Even discrete transistor circuits
are probably not good enough here. How much carrier suppression is
required? It seems to me that today's IC's should be able to do it.
If not, generate it at a low IF and use a simple notch.

> .... On the other hand, with active
>audio phase shift networks and divide by 4 RF drive, you can actually
>get pretty decent unwanted sideband suppression, except for amplitude
>balance, which is still a crapshoot. ....

Why is amplitude balance a crapshoot? With op-amp circuits it should be
easy, for the audio. You might have a valid argument on the RF side.
Can you explain?

> ...... Also, ham rigs could get by with
>more distortion and splatter that the FCC normally allows. For example,
>may popular ham linears won't meet FCC commercial regs that say 11th
>order intermod has to be down 60 dB. or thereabouts. (It's been 15
>years since I designed HP marine radios so don't hold me to the
>exact number).

Isn't the problem mostly in the linear amp? If this is the case I don't
see how the method of generating SSB should change that. 15 years ago,
the technology was not good enough. I agree.

  Commercial rigs use asymmetrical
>SSB filters that have very steep slopes on one side to filter out the
>residual carrier. The demise of the separate transmitter and receiver
>pretty much eliminated any remaining reason for using the phasing system

> ....
>since you are going to have a crystal filter for receive anyway, so
>you might as well use it. ......

Actually, I was thinking of using the phasing method for receive too,
thereby eliminating the need for the expensive crystal filter. Convert
early. Use a simple LC filter, similar to that used in the first IF
of a dual conversion receiver, then do most of the amplification and
filtering at audio. It is probably necessary to amplify the I and Q
channels separately because the phase shift is likely to be noisy.
It is easier to design a good audio amplifier than a good RF amplifier.

I have designed and build audio filters with slopes that put any RF
filters I have ever seen to shame. Doing the filtering at audio
makes it easy to have truly variable bandwidth, notch filters (pre
and post mixing) and other signal processing. It seems to me that
this benefit would be too great to pass up.

> .... Regarding the legendary audio quality of

>phasing rigs (I don't know how much truth there was to that), you can
>get excellent audio quality with a filter rig by using a really good
>filter.

No argument here. My HW-101 crystal filter has about 10 db ripple.
But, good filters are expensive. Most of them can be improved by
tuning the load capacitance.

My point and original question is that with today's technology ...
wideband low noise op-amps, switched capacitor filters, IC mixers,
possibly custom IC's .... the filter method may have seen its day
and it makes sense to take another look at the phasing method.
This was certainly not true 15 years ago.

Date: Mon, 15 Nov 1993 15:52:39 GMT
From: yuma!galen@purdue.edu
Subject: single sideband, phasing and T2/R2
To: ham-homebrew@ucsd.edu

In article <1993Nov14.020154.9354@ke4zv.atl.ga.us> gary@ke4zv.UUCP (Gary Coffman)
writes:
>In article <1993Nov13.164257.15906@cs.rit.edu> atd@cs.rit.edu (Albert T Davis)
writes:
>>I have been out of this for a while....
>>Is the filter method still the most common for SSB generation?
>>It seems to me that the phasing method is far superior with today's technology
>>al.
>It remains difficult to achieve a precise 90 degree phase shift over
>3 octaves of audio frequencies. DSP offers the potential to solve that
>problem though.
>Gary Coffman KE4ZV | Life's a journey, | gatech!wa4mei!ke4zv!gary
>Destructive Testing Systems | not a destination. | uunet!rsiatl!ke4zv!gary
>534 Shannon Way | Live it. | emory!kd4nc!ke4zv!gary
>Lawrenceville, GA 30244 | |

In the April, 93 issue of QST is the 'Multimode Phasing Exciter' alias the
T2 board. Uses 1% componenets in the phase shift network. I have the board
(along with the companion R2) but I haven't built it, as I can't decide if
I should put it on 440 SSB or 1750m CW/SSB. You must also have a 90 deg.
phase shift for the RF, which I can get for 440 from Mini-Circuits.

Anybody built these boards and willing to talk?

Galen, KF0YJ

Date: 15 Nov 93 15:48:26 GMT
From: library.ucla.edu!agate!howland.reston.ans.net!darwin.sura.net!
dtix.dt.navy.mil!oasys!kstuart@network.ucsd.edu
Subject: What's RG-22?
To: ham-homebrew@ucsd.edu

Well, I had about a thousand feet of the stuff. It's basically
discontinued, although TIMES wire and cable still carries it, I think.

Yep, it is 95 ohm, twin conductor.   Essentially shielded 95 ohm
twin lead. However, the info that I had indicates that the conductor
insulation was rubber and that the loss was pretty bad above HF.

Makes good zip cord, though...

Ken Stuart, W3VVN

Date: 16 Nov 93 18:46:56 GMT
From: ogicse!flop.ENGR.ORST.EDU!gaia.ucs.orst.edu!sequent!muncher.sequent.com!
edw@network.ucsd.edu
To: ham-homebrew@ucsd.edu

References <2606@arrl.org>, <CGHu5A.7oJ@ncifcrf.gov>, <CGJw1H.DCr@csn.org>s
Subject : Re: Power amplifier at 2.4gHz

In article <CGJw1H.DCr@csn.org> dfeldman@teal.csn.org (Dave Feldman) writes:
>>
>>How about a travelling wave tube? Theere's a guy in Ellicot City, MD,
>>Jeff Kreuth who services these things and has used ones for sale at reasonable
>>($200) prices. I'll find his ph# if you like.
>>Joe Mack NA3T
>>mack@ncifcrf.gov
>>
Oh boy a TWAT for only $200 ! :-)
Who said UHF isn't fun
--
 I think I've got the hang of it now .... :w :q :wq :wq! ^d X exit ^X^C ~.
 ^[x X Q :quitbye CtrlAltDel   ~~q :~q logout save/quit :!QUIT ^[zz ^[ZZ
 ZZZZ ^H ^@ ^L ^[c $q ^# ^E ^X ^I ^T ? help helpquit ^D ^d ^C ^c help
 ^]q exit ?Quit ?q anybackbone!sequent!edw edw@sequent.COM KA9AHQ 28.340

End of Ham-Homebrew Digest V93 #105

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